NTWORK Macro - Work File Assignments

With NTWORK macros, you define the work files to be used during the session. Within a session, up to 32 logical work files (numbered 1 to 32) can be used.

For an online session, all work files to be used have to be defined with an NTWORK macro (or with the corresponding dynamic profile parameter WORK).

The software components for accessing work files in different environments are called *access methods*. For the duration of a Natural session, each logical work file can be attached to only one access method. The access method for a work file is determined by the keyword parameter AM (see below).

In a batch session, any work files not attached to a specific access method will automatically be detected by the standard batch access method, provided that they have been predefined in the JCL.

Alternatively, OS/390 batch work files need not be predefined in the JCL. They can be defined with the subparameter AM=STD of the NTPRINT macro or PRINT parameter and allocated dynamically during the session by a Natural program using the DEFINE statement or user exit USR2021. See also FAMSTD.

This document covers the following topics:

- NTWORK Syntax
- NTWORK Keyword Parameters for All Environments
- NTWORK Keyword Parameters for AM=STD in All Environments
- NTWORK Keyword Parameters for AM=STD in OS/390 Environments
- NTWORK Keyword Parameters for AM=STD in VSE/ESA Environments
- NTWORK Keyword Parameters for AM=STD in BS2000/OSD Environments
- NTWORK Keyword Parameters for AM=CICS
- NTWORK Keyword Parameters for AM=COMP (Com-plete)
- NTWORK Alternative

NTWORK Syntax

In an NTWORK macro, you first specify one or more logical work file numbers, and then several keyword parameters, which define the characteristics which are to apply to these work files:

```
NTWORK (work-file-numbers),keyword-parameters,...
```

work-file-numbers

The file numbers must be specified first and enclosed in parentheses. The numbers can be from 1 to 31. They can be specified in any sequence. Multiple numbers must be separated from one another by commas or blanks. To specify a range of numbers, you can use a hyphen (-).

keyword-parameters

The keyword parameters for the various environments are described below

- for All Environments,
- for AM=STD in All Environments,
- for AM=STD in OS/390 Environments,

- for AM=STD in VSE/ESA Environments,
- for AM=STD in BS2000/OSD Environments,
- for AM=CICS.
- for AM=COMP (Com-plete),

For work files with different characteristics, you specify different NTWORK macros.

Examples:

```
NTWORK (2,12,18),AM=STD,DEST='WORK**'
  NTWORK (1,3,6-11,15),AM=COMP,OPEN=INITOBJ,CLOSE=CMD
```

NTWORK Keyword Parameters for All Environments

The following keyword parameters are available: AM | DEST | OPEN | CLOSE

AM - Type of Access Method

AM=*xxx* specifies the type of access method to be used:

STD	Standard sequential files (batch, TSO, TIAM, CMS OS simulation).
COMP	Com-plete print files.
CICS	CICS transient data or temporary storage.
CMS	CMS Disk and SFS files.
PC	Entire Connection.
USER	Third-party vendor work-file interface.
OFF	Unassigned.

> **Note:**
> WORK=OFF is equivalent to: WORK=((1-32)), AM=OFF).
> It does not affect any of the other keyword specifications.

DEST - External Dataset Name

DEST=*name* specifies the external dataset name (1 - 8 characters).

The meaning of this keyword parameter depends on the access method. For AM=STD, it is the logical dataset name (DDNAME).

If the destination is to be for multiple files, two asterisks (**) have to be specified for the file number. These will then be replaced by the corresponding logical file number for each work file.

The default value of DEST depends on the access method. For AM=STD, the default is DEST='CMWKF**' (note that a DEST value including two asterisks must be enclosed in apostrophes when using it as a dynamic parameter).

Under CICS:	There is no DEST default value for print files under CICS. Here, the DEST parameter is mandatory; that is, CICS work files without a valid DEST specification are ignored.
Under CMS:	For usage of DEST under CMS, refer to Natural under VM/CMS (in the Natural Operations documentation for mainframes).
Under VSE/ESA:	Only 7-character names are supported.

OPEN - Time of File Opening

OPEN=*xxx* determines when the file is to be opened:

Option	The file is opened
INIT	for output at session initialization.
OBF	sets the default OPEN value for the different environments (Batch, CICS, Com-plete, TSO).
OBJ	when the execution of the first object which accesses the file starts (this is the default).
INITOBF	for output at session initialization. Any subsequent re-opening of the file sets the default OPEN value for the different environments (Batch, CICS, Com-plete, TSO).
OBJ1	when the execution of the first object on level 1 which accesses the file starts. Otherwise, it is opened when it is first accessed.
ACC	when it is first accessed by a statement.
INITOBJ	for output at session initialization. Any subsequent re-opening of the file will be performed when the execution of the first object which accesses the file starts.
INITOBJ1	when the execution of the first object on level 1 which accesses the file starts. Otherwise, it is opened when it is first accessed.
INITACC	for output at session initialization. Any subsequent re-opening of the file will be performed when it is first accessed by a statement.

CLOSE - Time of File Closure

CLOSE=*xxx* determines when the file is to be closed:

Option	The file is closed
OBJ	either when processing of the object in which it was first accessed is finished, or when command mode, NEXT mode or MAINMENU is reached.
CMD	when command mode, NEXT mode or MAINMENU is reached (this is the default).
FIN	at session end. With CLOSE=FIN, a CLOSE WORK FILE statement does not cause the work file to be closed. When the end-of-file condition occurs during the READ WORK FILE statement, Natural closes the work file immediately.
CLOSE=USER	This value specifies that a work file is closed only if the file is open and one of the following conditions is true: • a CLOSE WORK statement is issued, • a DEFINE WORK statement is issued, • at session termination.

NTWORK Keyword Parameters for AM=STD in All Environments

The following keyword parameters are available: RECFM | BLKSIZE | LRECL | TRUNC | PAD

RECFM - Default Record Format of Dataset

RECFM=*xxxx d*etermines the default record format of the dataset.

The following formats are supported:

F	Fixed
V	Variable
U	Undefined
B	Blocked
S	Spanned
A	ASA
M	Machine control characters

The following values and also combinations of values are possible:

Possible value:	F, FA, FM, FB, FBA, FBM, V, VA, VM, VB, VBA, VBM, VBS, VBSA, VBSM, U, UA, UM.
Default value:	RECFM=VB (variable blocked).

The RECFM specification only applies if no record format is predefined in the JCL or in the dataset DCB (OS/390 only).

BLKSIZE - Default Block Size of Dataset

BLKSIZE=*nnnnn* determines the default block size (in bytes) of the dataset.

Possible values:	0, or 8 to 32767.
Default value:	4628

The BLKSIZE specification only applies if no block size is predefined in the JCL or in the dataset DCB (OS/390 only).

LRECL - Default Record Length of Dataset

LRECL=*nnn d*etermines the default record length (in bytes) of the dataset.

Possible values:	0, or 5 - 32767.
Default value:	0

This parameter is used particularly to check for truncation and padding.

- For RECFM=V (B) the LRECL value includes a 4-byte record descriptor word.
- If LRECL = 0 is defined, the following applies:
  - With RECFM=V (B), LRECL defaults to BLKSIZE-4.
  - With RECFM=U, LRECL defaults to BLKSIZE.
  - With RECFM=F (B), the maximum record length in the Natural program being executed is taken when the file is opened. If no record length from a program is available when the file is opened, for example with OPEN=INIT, this leads to an error.

The LRECL specification only applies if no record length is predefined in the JCL or in the dataset DCB (OS/390 only).

TRUNC - Truncation of Output Records

TRUNC=ON/OFF determines whether the output records are truncated or not:

ON	Output records that are longer than the record length (LRECL) of the dataset will be truncated.
OFF	Error NAT1512 will be issued if an output record is longer than the dataset record length (this is the default).

PAD - Padding of output records

PAD=ON/OFF determines whether the output records are padded with blanks or not (applies only to datasets of fixed record length):

ON	Output records that are shorter than the record length (LRECL) of the dataset will be padded with hexadecimal zeros (this is the default).
OFF	Error NAT1510 will be issued if an output record is shorter than the dataset record length.

NTWORK Keyword Parameters for AM=STD in OS/390 Environments

The following keyword parameters are available: REREAD | FREE | BUFNO | DISP | VMAX

REREAD - Closing of Tape File

REREAD=*xxx* sets the REREAD option for the closing of the tape file:

ON	The REREAD option is set for the CLOSE SVC. This causes the volume to be repositioned to reprocess the dataset (this is the default).
OFF	The REREAD option is not set for the CLOSE SVC.

FREE - Dataset De-allocation at File Closure

FREE=*xxx* determines whether the dataset is de-allocated when the file is closed:

ON	The FREE option is set for the CLOSE SVC, which means that the dataset is de-allocated when it is closed (and not at step termination).
OFF	The FREE option is not set for the CLOSE SVC (this is the default).

BUFNO - Default Number of OS/390 I/O Buffers of Dataset

BUFNO=*nnn* defines the default number of OS/390 I/O buffers of the dataset.

Possible values	0 - 255.
Default value	0. In this case, OS/390 allocates five I/O buffers per default.

The number of I/O buffers can improve the performance of print and work file access dramatically. Note that the storage for I/O buffers is allocated below the 16 MB line.

> **Note:**
> The BUFNO specification applies only if no BUFNO value is predefined in the JCL.

DISP - Open Work File for Modification

DISP=MOD determines that the print file is opened for modification, i.e. the new records are added at the end of the file.

This corresponds to the JCL DD statement subparameter DISP=MOD.

VMAX - Control LRECL for Variable Record Format

VMAX controls the LRECL setting for an output file with variable record format (RECFM=V).

ON	Providing a nonzero BLKSIZE value exists for the file, VMAX=ON sets LRECL=BLKSIZE-4 for variable record format, regardless of the LRECL setting in the DCB or the LRECL subparameter.
NAT	LRECL is set to the length +4 of the largest record in the application program if this value is less than LRECL in the DCB for the dataset.
OFF	LRECL from the DCB for the dataset is used. Default value.

NTWORK Keyword Parameters for AM=STD in VSE/ESA Environments

The following keyword parameters are available: SYSNR | LABEL | REWIND

SYSNR - Logical VSE SYS Number

SYSNR=*nn* determines the logical VSE SYS number.

Possible values:	1 - 99.
Default value:	By default, the SYS number is identical to the work file number.

LABEL - Tape Label Processing

LABEL=*xxx d*etermines the tape label processing:

ON	The tape is in standard label format (this is the default).
OFF	The tape is unlabeled with front tape mark.
NOTM	The tape is unlabeled without front tape mark.

REWIND - Action at File Closure

REWIND=*xxx* determines the action to be taken when a tape file is closed:

ON	The tape is rewound when the file is closed (this is the default).
OFF	The tape is not rewound when the file is closed.
UNLOAD	The tape is unloaded when the file is closed.

NTWORK Keyword Parameters for AM=STD in BS2000/OSD Environments

The following keyword parameter is available: DISP

DISP - File Open Mode

DISP=*xxx d*etermines the open mode of the file:

EXT	The open mode is set to EXTEND.
All user values	The open mode is set to the default value OUTPUT.

NTWORK Keyword Parameters for AM=CICS

The following keyword parameters are available: TYPE | DISP

TYPE - Type of CICS Storage Medium

TYPE=*xxxx* specifies the type of CICS storage medium to be used:

MAIN	Temporary main storage.
AUX	Temporary auxiliary storage.
TD	Transient data.

DISP - CICS Storage Queue Disposition

DISP=(*xxx,xxx*) specifies the CICS storage queue disposition.

Possible value pairs are:

(NEW,KEEP)	The storage queue is deleted when the file is opened (this is the default)
(NEW,DELETE)	The storage queue is deleted when the file is opened and when it is closed.
(OLD,DELETE)	The storage queue is deleted when the file is closed.
(OLD,KEEP)	The storage queue is not deleted.

> **Note:**
> The DISP specification does not apply to CICS extra-partition transient data queues.

NTWORK Keyword Parameters for AM=COMP

The following keyword parameters are available for AM=COMP (Com-plete): TYPE | BLOCKS | BLKSIZE

TYPE - Type of Storage Access

TYPE=*xxx* specifies the type of storage access to be used:

SHR	Shared access, that is, the work file is accessible by all users.
TID	The work file is only available to the current Com-plete terminal ID.
DYN	The work file is only available to the current terminal stack level.

BLOCKS - Number of Storage Blocks

BLOCKS=*nnnn* specifies the number of storage blocks to be allocated.

Possible values:	1 to 9999
Default value:	20

BLKSIZE - Size of Storage Blocks

BLKSIZE=*nnnn* determines the default block size (in bytes) of the dataset.

Possible values:	0, or 8 - 32767
Default value:	4628

NTWORK Alternative

Instead of the NTWORK macro, you can also use the dynamic profile parameter WORK. With the WORK parameter, you have to specify the entire string of values enclosed in parentheses. For example:

```
WORK=((1,2,5-12,18),AM=STD,OPEN=INITOBJ,CLOSE=OBJ)
```